REMARKS

Claims 1-8 are pending in the above-identified application.

Issues Under 35 U.S.C. 102(b) and 102(e)

Claims 1-8 have been rejected under 35 U.S.C. 102(b) and/or 102(e) as being unpatentable over Kato '516 (EP 0 851 516 A2) and Kato '642 (USP 6,083,642). These rejections are traversed for the following reasons.

Present Invention and Its Advantages

The present invention is directed to a battery which includes as an active material powder nickel hydroxide particles containing cobalt, wherein: [1] the cobalt is contained as a "solid-solution" element within the nickel hydroxide particles; and [2] the cobalt has been treated so as to have a high valence of at least 3, as recited in claim 1. In order for the cobalt to be contained as a solid-solution element, an alkali coprecipitation method may be used to form nickel hydroxide powder particles containing the cobalt as noted at page 3, lines 16-19 of the present specification. In order for the solid-solution cobalt element in the nickel hydroxide particles to obtain a valence of at least 3, it is necessary to treat the nickel hydroxide powder particles

containing the cobalt with a process including heat treatment and the presence of oxygen as noted at page 3, lines 19-23 of the present specification. Raising the cobalt valence, i.e. oxidizing the cobalt, may be done by treating the nickel hydroxide powder containing bivalent cobalt as a solid-solution element (e.g. prepared by the above-noted alkali coprecipitation method) with a basic (e.g. sodium hydroxide) aqueous solution to obtain a mixture which is then subjected to heat and exposed to oxygen (e.g. exposed to air) before being washed with water and dried as noted in connection with Experiment 1, Step 1-2 described at pages 7-8 of the present specification.

Employment of the unique nickel hydroxide particles containing higher valence, oxidized cobalt as a solid-solution element in an alkaline storage battery provides for advantageously improved battery properties, such as advantageously improved discharge capacity. The comparative test results shown in Tables 1 and 2 at pages 13 and 15 of the present specification provide evidence of the improved properties of the present invention. Table 1 shows that Batteries A1-A4 all exhibit superior discharge capacity properties over Batteries X, Y and Z. In this regard, note that Batteries X, Y and Z were essentially identical to Batteries A1-A4 (present invention), except that the nickel hydroxide particles

contained bivalent cobalt as a solid-solution element, rather than the oxidized cobalt as a solid-solution element (which requires the above-noted heat treatment and exposure to oxygen in a basic aqueous environment).

Distinctions Between Present Invention and Kato '516/Kato '642

Kato '516 and Kato '642 are of the same patent family. In order to clearly address the points raised in the Office Action, reference will be made to the disclosure of Kato '642 which is referred to in the Office Action. It is understood that Kato '516 has essentially the same disclosure, such that all of the distinctions noted below with respect to Kato '642 also apply to Kato '516.

Kato '642 discloses an electrode material of nickel hydroxide particles having the surface thereof coated with higher cobalt oxide with an average cobalt valence of higher than 3.0, as noted at column 4, line 14 to column 5, line 5. Note that Kato '642 clearly states numerous times therein that the higher cobalt oxide is disposed as a coating on the surface of nickel hydroxide particles. In this regard, note column 4, line 66 to column 5, line 3; column 6, lines 16-19; column 7, lines 9-13; and column 9, lines 10-32, as well as column 9, line 64 to column 10, line 2.

Kato '642 discloses that the higher cobalt oxide coating is formed on nickel hydroxide particles as noted at column 7, lines 43-57. Kato '642 discloses in Example 1 at columns 11-12 that nickel hydroxide particles are formed by using a known technique wherein nickel sulfate, cobalt sulfate and zinc sulfate are combined in an aqueous solution to which sodium hydroxide solution is slowly added dropwise while adjusting the pH in order to deposit spherical solid solution nickel hydroxide particles (column 11, lines 50-60). The solid solution nickel particles have cobalt and zinc "incorporated therein" as solid solution elements, however, the cobalt is not of a higher valence, because this solid solution cobalt element is not treated to form higher cobalt oxide. Rather, only the cobalt disposed as a surface coating on the nickel hydroxide particles is treated so as to be oxidized and converted into higher cobalt oxide.

Kato '642 fails to disclose or suggest a battery active material powder of nickel hydroxide particles which contain cobalt as a solid solution element, wherein the cobalt has been treated in order to have a high valence of at least 3, as in the present invention. In this regard, note that a careful review of Example 1 at columns 11-12 of Kato '642, as well as a careful review of the entire disclosure of Kato '642, fails to reveal any treatment step

wherein nickel hydroxide powder already containing cobalt as a solid solution element is mixed in a basic aqueous solution and then subjected to heat treatment and exposed to oxygen (e.g. air) as in Step 1-2 at pages 7-8 in the present specification. In contrast, Kato '642 discloses that the solid solution nickel hydroxide particles prepared as described at column 11, lines 50-65 are subsequently coated with $Co(OH)_2$ which is then subjected to an oxidation treatment as described in connection with Example 2 at column 21, line 15 to column 23, line 54. This $Co(OH)_2$ coating/oxidation treatment of Kato '642 differs completely from the heat/oxidation treatment required to form the active material powder of the present invention, since the nickel hydroxide particles containing non-oxidized cobalt as a solid solution element of Kato '642 are not mixed with a basic aqueous solution and subjected to heat and oxygen as in the present invention, but rather these nickel hydroxide particles of Kato '642 are coated with $Co(OH)_2$ and then the **coating** is then subjected to heat and oxidation treatment. Consequently, the claims of the present application clearly patentably define over the disclosure of Kato '642 which fails to describe or suggest any technique for forming the unique nickel hydroxide particles containing cobalt as a solid solution element, wherein the contained cobalt has a higher valence

of at least 3. Therefore, significant patentable distinctions exist over Kato '642, as well as Kato '516, such that the above-noted rejections should be withdrawn.

Conclusion

It is submitted for the reasons stated above that the present claims define patentable subject matter such that this application should now be placed condition for allowance.

If any questions arise regarding the above matters, please contact Applicant's representative, Andrew D. Meikle (Reg. No. 32,868), in the Washington Metropolitan Area at the phone number listed below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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